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10/616,037	07/10/2003	Hong-Seok Lee	277/ 011	9800

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EXAMINER

BODDIE, WILLIAM

ART UNIT PAPER NUMBER

2674

DATE MAILED: 02/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/616,037	Applicant(s) LEE ET AL.	
	Examiner William Boddie	Art Unit 2674	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- ✓ 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In communications dated December 28th, 2005, the Applicant amended claims 1-2 and 6-9. The rejection of claims 1-11 was traversed by the Applicant. Claims 1-11 are currently pending.

Response to Arguments

2. Applicant's arguments filed 12/28/05 have been fully considered but they are not persuasive.

3. On page six of the amendment, the Applicant traverses the rejection of independent claims 1 and 8. The Applicant argues that the Ito reference does not disclose or suggest the use of a white signal during a non-display period. That particularly, the Ito reference uses a white signal within a display period of serial image formation. The Applicant's main contention seems to be that the white signal is a part of Ito's display period and therefore not in a "non-display period."

Originally, independent claims 1 and 8 were rejected under 35 U.S.C. 103(a) using Kawamura as the main reference in view of Ito. Kawamura discloses a set of driving waveforms that include a non-display period (T2 in fig. 8a, col. 6, lines 9-12) inserted between display periods.

Similarly, the Ito reference discloses inserting a white signal between display periods (G, B and R). In this instance the non-display period of Kawamura and the white signal of Ito are analogous. Kawamura's non-display period displays black while Ito's displays white. The Ito reference is used, simply, to show prior art teaching the

Art Unit: 2674

insertion of a white signal amongst display periods, just as Kawamura's blanking period is.

It seems clear that one of ordinary skill in the art having observed both the timing diagrams of Kawamura containing a blanking period and also the insertion of a white signal as in the Ito reference would have combined the two. The end result being, Kawamura's black blanking period being replaced with the white signal of Ito. With this combination it is clear that white light is displayed during the non-display period of Kawamura, thus satisfying the limitations of claims 1 and 8.

4. With respect to pages 7 and 8 of the Amendment, the Applicant argues that because claims 2-11 are dependent upon either independent claim 1 or 8, they are allowable. As shown above, the rejection of claims 1 and 8 has been renewed and believed to be proper. As such the Applicant's arguments concerning claims 2-11 are moot.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura et al. (US 5,117,224) in view of Ito (JP 9,090,916).

With respect to claim 1, Kawamura discloses, a liquid crystal display (LCD), comprising: an LCD panel a plurality of color filters (FR, FG, FB in fig. 2), to selectively

Art Unit: 2674

filter white light; a driver for driving the LCD panel, wherein, during display periods, the driver drives the LCD panel to display a desired color by mixing a combination of light output by the plurality of color filters (col. 1, lines 11-13), and during non-display periods between display periods displays a blanking period (col. 6, lines 9-12, and T2 in fig. 8a).

Kawamura does not expressly disclose, wherein during non-display periods, between the display periods the driver drives the LCD panel to display white light.

Ito discloses, inserting a white sub-field in the display of data (W in fig. 3a).

Ito and Kawamura are analogous art because they are from the same field of endeavor namely, driving LCD panels.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the blanking period of Kawamura with the white period of Ito.

The motivation for doing so would have been to reduce color separation and to reduce a color change (Ito, Problem to be Solved).

Therefore it would have been obvious to combine Ito and Kawamura for the benefit of reducing color separation to obtain the invention as specified in claim 1.

With respect to claim 8, as claim 8 is merely a method statement of the above limitations of claim 1, claim 8 is rejected on the same merits as shown above.

7. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura et al. (US 5,117,224) in view of Ito (JP 9,090,916) and further in view of Yoshinaga et al. (US 2001/0038371).

With respect to claim 2, Kawamura and Ito disclose, the LCD according to claim 1 (see above).

Art Unit: 2674

Kawamura and Ito do not expressly disclose, wherein during non-display periods, the driver drives the LCD panel to display no light at different, distinct time periods from when the LCD panel displays white light during non-display periods.

Yoshinaga discloses, inserting a black display period into a frame (reset period in fig. 7, and paragraph 63).

Ito, Kawamura, Yoshinaga are all analogous art because they are from the same field of endeavor namely, driving LCD panels.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include a black display period, taught by Yoshinaga, in addition to the white display period, taught by Ito, in the non-display period of Kawamura.

The motivation for doing so would have been to reset the pixel, and allow for faster adjustment amongst transmission levels within the pixel.

Therefore it would have been obvious to combine Ito, Kawamura, and Yoshinaga for the benefit of resetting the pixel to obtain the invention as specified in claim 2.

With respect to claim 9, as claim 9 is merely a method statement of the above limitations of claim 2, claim 9 is rejected on the same merits as shown above.

8. Claims 3-5, 7, and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura et al. (US 5,117,224) in view of Ito (JP 9,090,916) and further in view of Iwauchi (US 5,843,492).

With respect to claim 3, Kawamura and Ito disclose, the LCD according to claim 1 (see above).

Art Unit: 2674

Kawamura and Ito do not expressly disclose, wherein the plurality of color filters are transmissive color filters attached to an upper portion of the LCD panel.

Iwauchi discloses, a plurality of transmissive color filters (6 in fig. 1) attached to an upper portion of the LCD panel (8 in fig. 1, also note col. 13, lines 63-67 and col. 14, lines 1-12).

Ito, Kawamura, Iwauchi are all analogous art because they are from the same field of endeavor namely, LCD panels.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace Kawamura's lower portion color filters with Iwauchi's upper portion transmissive color filters.

The motivation for doing so would have been to eliminate the need for contact through-holes.

Therefore it would have been obvious to combine Ito, Kawamura, and Iwauchi for the benefit of eliminating contact through-holes, to obtain the invention as specified in claim 3.

With respect to claim 4, Kawamura, Ito and Iwauchi disclose, the LCD according to claim 3 (see above).

Iwauchi further discloses, a reflecting plate (16 in fig. 2a, col. 7, lines 15-17).

At the time of the invention it would have been obvious to one of ordinary skill in the art to include a reflecting plate, taught by Iwauchi, in the LCD panel disclosed by Kawamura and Ito.

The motivation for doing so would have been to lower power consumption by requiring a backlight to illuminate the panel.

Therefore it would have been obvious to combine Ito, Kawamura, and Iwauchi for the benefit of lower power usage to obtain the invention as specified in claim 4.

With respect to claim 5, Kawamura and Ito disclose, the LCD according to claim 1 (see above), wherein the color filters are attached to the lower portion of the LCD panel.

Kawamura and Ito do not expressly disclose, wherein the plurality of color filters are reflective color filters.

Iwauchi discloses, reflective color filters (21(a,b,c) in fig. 6, col. 14, lines 25-28)

At the time of the invention it would have been obvious to one of ordinary skill in the art to include reflective color filters, disclosed by Iwauchi, in the LCD panel of Kawamura and Ito.

The motivation for doing so would have been to remove the need for a reflecting plate in panel.

Therefore it would have been obvious to combine Ito, Kawamura, and Iwauchi for the benefit of eliminating the need for a reflecting plate to obtain the invention as specified in claim 5.

With respect to claim 7, Kawamura, Ito and Iwauchi disclose, the LCD according to claim 5 (see above).

Iwauchi further discloses, wherein the plurality of color filters of the reflective color filter are made of dielectrics having different indices of refraction (While Iwauchi's

Art Unit: 2674

embodiments use cyan, magenta, and yellow there is no reason one couldn't create the same filter using red, green, and blue. Col. 14, lines 36-45).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to construct the color filters of Kawamura with dielectrics of different indices of refraction, taught by Iwauchi.

The motivation for doing so would have been to create filters of similar heights, unlike Kawamura.

Therefore it would have been obvious to combine Ito, Kawamura, and Iwauchi for the benefit of similar size color filters to obtain the invention as specified in claim 7.

With respect to claim 10, as claim 10 is merely a method statement of the above limitations of claim 3, claim 10 is rejected on the same merits as shown above.

With respect to claim 11, as claim 11 is merely a method statement of the above limitations of claim 5, claim 11 is rejected on the same merits as shown above.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura et al. (US 5,117,224) in view of Ito (JP 9,090,916) in view of Iwauchi (US 5,841,492) and further in view of Alvarez (US 5,131,736).

With respect to claim 6, Kawamura, Ito, and Iwauchi disclose, the LCD according to claim 5 (see above).

They do not expressly disclose wherein the plurality of color filters are made of photonic crystals, which are alternate arrays of dielectrics.

Alvarez discloses, a filter constructed of alternate arrays of dielectrics (col. 3, lines 27-45).

Art Unit: 2674

Kawamura, Ito, Iwauchi, and Alvarez are all analogous art because they are directed to a similar problem solving area, namely filtering white light efficiently.

At the time of the invention it would have been obvious to one of ordinary skill in the art to use the dielectric array of Alvarez in place of the dielectric mirror of Iwauchi.

The motivation for doing so would have been for the higher efficiency of the dielectric array (Alvarez, col. 1, lines 21-25).

Therefore it would have been obvious to combine Kawamura, Ito, Iwauchi, and Alvarez for the benefit of better filter efficiency to obtain the invention as specified in claim 6.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

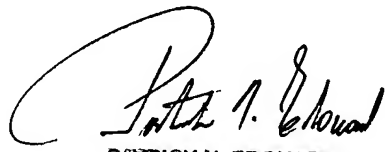
Art Unit: 2674

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Will Boddie whose telephone number is (571) 272-0666. The examiner can normally be reached on Monday through Friday, 7:30 - 4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wlb
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